

REMARKS

Claims 1-7, 9-27, and 46-53 are pending in the application, claims 48-53 being newly added herein. Claims 1 and 48 are the only independent claims.

New claims 48-53 include language or limitations not present in claims 1-7, 9-27, 46, and 47, for purposes of explicitly addressing the Examiner's § 112 and § 103 rejections of claims 1-7, 9-27, 46, and 47. These additional limitations are discussed hereinafter. With respect to claims 1-7, 9-27, 46, and 47, applicants submit new or rephrased arguments below in an attempt to demonstrate that the express limitations of new claims 48-53 are implicitly present in claims 1-7, 9-27, 46, and 47 so that these claims are also allowable. To the extent that arguments submitted in previous amendments apply to the pending rejections, those arguments are hereby incorporated by reference.

Claims Rejections - 35 U.S.C. § 112

Claims 1-7, 9-27, 46, and 47 stand rejected under 35 U.S.C. § 112, first paragraph, because the specification, while being enabling for use of parameter controlled separation gas in a compatible flow-cytometric device, does not reasonably provide enablement for use of any separation gas introduced into any flow cytometric device. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with the rejected claims.

Applicants respectfully traverse the rejection of claims 1-7, 9-27, 46, and 47 under 35 U.S.C. § 112, first paragraph. This rejection is not an apposite rejection with respect to mechanical apparatus claims such those pending in this case. The Examiner's rejection is basically a reaction to the fact that applicants' claims 1-7, 9-27, 46, and 47 may cover some embodiments that do not work. However, that possibility is not a proper basis on which to reject applicants' apparatus claims. Mechanical apparatus claims

frequently, if not inevitably, cover multiple embodiments that do not work. Inevitably, mechanical apparatus claims, unless they are extremely detailed picture claims, do not include every element needed for the claimed apparatus to work. Accordingly, there are numerous configurations of the claimed elements that do not work. These are non-enabled embodiments in the Examiner's parlance. But the claims are allowed nonetheless.

Applicants' new claim 48 includes all of the limitations of claim 1 and additionally recites that the separation means introduces a *parameter-controlled* separation gas between each of the plurality of samples in the fluid flow stream and that the separation gas has parameters of predetermined values to permit the hydrodynamic focusing of the fluid flow stream in the flow cytometer.

Pursuant to the Examiner's remarks in the final Office Action, claim 48 includes explicit language limiting the claimed configuration of elements to embodiments that are enabled by the specification.

Claims Rejections - 35 U.S.C. § 103

Claims 1-3, 5, 7, 9-12, 15-19, 26, and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,853,336 to Saros et al. in view of U.S. Patent No. 6,159,739 to Weigl et al.

Claims 4, 6, 13, 14, 20-24, 46, and 47 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,853,336 to Saros et al. in view of U.S. Patent No. 6,159,739 to Weigl et al. and further in view of U.S. Patent No. 6,132,685 to Kersco et al.

Claim 25 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,853,336 to Saros et al. in view of U.S. Patent No. 6,159,739 to Weigl et al. and further in view of U.S. Patent No. 6,132,685 to Kersco et al., and additionally in view of U.S. Patent No. 5,788,927 to Farrell et al.

Claim 1 Applicants respectfully traverse the rejection of claim 1 under 35 U.S.C. § 103(a) and maintain that claim 1 defines an invention that is not obvious in view of the prior art. In brief, claim 1 defines a combination of elements that the prior art has steadfastly refused to recognize as being possible. On the contrary, the prior art clearly holds that separation gas is NOT to be introduced into a fluid flow stream that is being fed to a flow cytometer that hydrodynamically focuses the fluid flow stream. Thus, the prior art teaches away from the invention as defined in claim 1.

Saros et al. is directed to a single channel continuous flow system wherein successive liquid segments are separated by respective immiscible segments. Weigl et al. relates to a device for injecting small particles into a sheath stream, for achieving sheath flow in a flow cytometer and in creating hydrodynamic focusing.

Saros et al. does not discuss flow cytometers with hydrodynamic focusing and those of ordinary skill in the art would not apply the invention of Saros et al. to such cytometers, given the established teaching in art that gas is not to be introduced into sample streams fed to flow cytometers with hydrodynamic focusing. One of ordinary skill in the art would be *motivated against* combining the teachings of Saros et al, with the teachings of Weigl et al.

Neither Saros et al. nor Weigl et al. discloses or suggests anything that would enable the application of the teachings of Saros et al. to flow cytometers with hydrodynamic focusing as taught by Weigl et al. Without applicants' teachings in the instant application, there would be no enablement of the invention set forth in applicants' claim 1 and no motivation on the part of one of ordinary skill in the art to arrive at that invention. Thus, claim 1 is considered patentable over the art relied on by the Examiner under Section 103.

Claim 48 As indicated above, applicants' new claim 48 includes all of the limitations of claim 1 and additionally recites that the separation means introduces a *parameter-controlled* separation gas between each of the plurality of samples in the fluid

flow stream and that the separation gas has parameters of predetermined values selected to permit the hydrodynamic focusing of the fluid flow stream in the flow cytometer.

None of the references relied on by the Examiner, particularly including Saros et al. and Weigl et al., whether considered individually or collectively, teaches or suggests separation means for introducing a *parameter-controlled* separation gas between each of a plurality of samples in a fluid flow stream where the separation gas parameters have predetermined values selected to permit the hydrodynamic focusing of the fluid flow stream in a flow cytometer.

Claim 49 Dependent claim 49 further limits the subject matter of claim 48 by reciting that the separation means includes tubing extending from the pump and having compression characteristics allowing the pump to move samples separated by gas through the tubing at a speed of at least 6 samples per minute without causing adjacent samples to mix with one another.

The prior art relied on by the Examiner, particularly Saros et al. and Weigl et al., fail to teach or suggest such tubing.

Claim 51 Dependent claim 51 further limits the subject matter of claim 48 by reciting that the separation means includes tubing of a given size for introducing separation gas aliquots of a controlled volume into the fluid flow stream with the samples flowing at a certain rate. According to claim 51, the given size of the tubing, the controlled volume of the gas samples, and the certain rate of the samples in the fluid flow stream are all predetermined to permit the hydrodynamic focusing of the fluid flow stream in the flow cytometer.

The prior art relied on by the Examiner, particularly Saros et al. and Weigl et al., fail to teach or suggest a tubing size, a controlled gas aliquot volume, and sample flow rate that are selected to permit the hydrodynamic focusing of a fluid flow stream in a flow cytometer.

Conclusion

For the foregoing reasons, independent claims 1 and 48, as well as the claims dependent therefrom, are deemed to be in condition for allowance. An early Notice to that effect is earnestly solicited.

Should the Examiner believe that direct contact with applicant's attorney would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the number below.

Respectfully submitted,

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